VEKUA, I.N., akademik

Conditions for a momentless state of strained equilibrium of a convex shell. Soob. AN Gruz.SSR 20 no.5:525-532 My '58.
(Elastic plates and shells) (MIRA 11:10)

VEKUA, I.N., akademik

Conditions of momentless conver shells. Soob.AN Gruz.SSR 21 no.6:649-652 D '58. (MIRA 12:4)

1. AN SSSR, Matematicheskiy institut im. V.A. Steklova, Moskva.
(Elastic plates and shells)

AUTHOR: Boyarskiy, B.V. and Vekua, I.N. 38-22-2-2/8

TITLE: Proof of the Rigidity of Piecewise-Regular Closed Convex Surfaces of Nonnegative Curvature (Dokazatel'stvo zhestkosti kusochno-regulyarnykh zamknutykh vypuklykh poverkhnostey neotritsatel'noy krivizny)

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya Matematicheskaya, 1958, Vol 22, Nr 2, pp 165-176 (USSR)

ABSTRACT: Let $\vec{X} = \vec{X}(u,v)$ be the equation of a regular surface S which is limited by a finite number of piecewise smooth simple curves $L_0, L_1, \ldots, L_m$. Furthermore let $\vec{Y} = \vec{Y}(u,v)$ and $\vec{Z} = \vec{Z}(u,v)$ be the fields of displacement and of rotation which correspond to an infinitely small deformation of the surface. Then it is $d\vec{Y} = \vec{Z} \times d\vec{X}$, $d\vec{X} \cdot d\vec{Y} = 0$, from which Blaschke [Ref 1] with the aid of the Ostrogradsky-formula obtains the following relation:

$$(1) \qquad 2 \iint_S \vec{X}\, \vec{Z}_u \vec{Z}_v \, du dv = \int_L \vec{X}\, \vec{Z}\, d\vec{Z}$$

where L denotes the totality of the L_i.

Card 1/ 2

Proof of the Rigidity of Piecewise-Regular Closed Convex Surfaces of Nonnegative Curvature 38-22-2-2/8

The authors consider closed convex surfaces which are combined together from a finite number of regular surface elements with nonnegative Gauss curvature. By application of (1) (in a somewhat varied form) to each regular part of the surface and by addition the rigidity is proved at first for the case that the limiting contours of the single partial pieces are Jordan curves and then for the general case. At first conical points are excluded. Then it is shown by a limit passage that the proof even holds in presence of conical points. There are 2 references, 1 of which is Soviet, and 1 German.

SUBMITTED: April 1, 1957

AVAILABLE: Library of Congress

1. Surfaces—Mathematical analysis

Card 2/2

16(1) PHASE I BOOK EXPLOITATION SOV/2760

Vekua, Il'ya Nestorovich

Obobshchennyye analiticheskiye funktsii (Generalized Analytical Functions) Moscow, Fizmatgiz, 1959. 628 p. Errata slip inserted. 6,000 copies printed.

Eds.: B. V. Boyarskiy and E. G. Poznyak; Tech. Ed.: N. A.Tumarkina.

PURPOSE: This book is intended for students taking advanced university courses in mechanics and mathematics, Aspirants, and scientific workers.

COVERAGE: The author studies the fundamentals of the general theory of generalized analytic functions and gives certain applications of the theory to problems of differential geometry and the theory of shells. This book contains many results achieved by the author and his students which are published for the first time. The supplement to Chapter 4 was written by B. V. Boyarskiy. The author thanks V. S. Vinogradov, L. S. Klabukova, Sun Ho-sheng, Tong, Yon-

Card 1/9

chol Yu. P. Krivenkovyy, A. V. Bitsadze, B. V. Boyarskiy, I. 1. Danilyuk, and E. G. Poznyak for their help in preparing the book. There are 97 references: 64 Soviet, 13 German, 10 English, 8 French, 1 Rumanian, and 1 Italian.

TABLE OF CONTENTS:

Generalized Analytical (Cont.) SOV/2760

AVAILABLE: Library of Congress

Card 9/9

LK/mmh
1-14-60

VEKUA, I.N.

Remarks on properties of solutions to the equation $\Delta u = -2ke^u$.
Sib. mat. zhur. 1 no.3:331-342 S-O '60. (MIRA 14:2)
(Geometry, Differential) (Functional equations)

BITSADZE, A.V., red.; VEKUA, I.N., red.; KUDRYAVTSEV, L.D., red.; MIGIRENKO, G.S., red.; RABOTNOV, Yu.N., red.; KHRISTIANOVICH, S.A., red.; ALEKSANDROVSKIY, B.M., red.; NAZARYANTS, T.N., red.; VYALYKH, A.M., tekhn. red.; LOKSHINA, O.A., tekhn. red.

[Some problems in mathematics and mechanics] Nekotorye problemy matematiki i mekhaniki. Novosibirsk, Izd-vo Sibirskogo otd-nie AN SSSR, 1961. 265 p. (MIRA 15:2)

1. Akademiya nauk SSSR. Sibirskoye otdeleniye.
(Mathematics) (Mechanics)

LAVRENT'YEV, M.A., otv.red.; MIKHAYLOV, G.K., red.; BITSADZE, A.V., red.; VEKUA, I.N., red.; DZHANELIDZE, G.Yu., red.; LUR'YE, A.I., red.; MANDZHAVIDZE, G.F., red.; MIKHAYLOV, G.K., red.; SKDOV, L.I., red.; SOBOLEV, S.L., red.; SOKOLOVSKIY, V.V., red.; KHRISTIANOVICH, S.A., red.; SHERMAN, D.I., red.; RYVKIN, A.Z., red.izd-va; VOLKOVA, V.V., tekhn.red.

[Problems in the mechanics of solids] Problemy mekhaniki sploshnoi sredy; k semidesiatiletiiu akademika N.I.Muskhelishvili. Moskva, 1961. 577 p. (MIRA 14:3)

1. Akademiya nauk SSSR.
(Mechanics, Analytic) (Elastic solids)

S/763/61/000/000/005/013

AUTHOR: Vekua, I.N.

TITLE: Contribution to the theory of quasi-conformal representations.

SOURCE: Nekotoryye problemy matematiki i mekhaniki. Novosibirsk, Izd-vo Sib. otd. AN SSSR, 1961, 57-68.

TEXT: Reference is made to M.A. Lavrent'yev's analytical and geometrical methods which constructed, in a certain sense, a definitive theory of quasi-conformal representations. The present paper develops a different approach to these problems, as an extension to the author's earlier work (AN SSSR, Dokl., v.100, no.2, 1955, 197-200; and Obobshchennyye analiticheskiye funktsii [Generalized analytical functions]. Fizmatgiz, Moscow, 1959), which is based on the utilization of the properties of some singular integrals (Calderon, A., Zygmund, A., Am. J. Math., no.78, 1956, 289-309). The method is distinguished by its ability to permit an effective construction of quasi-conformal representations for prescribed characteristics. Upon defining the purpose of the theory of quasi-conformal representations as the study of the properties of a special class of topological representations of a region of a surface of one complex variable in the region of another complex variable, the problem of the construction of the quasi-conformal representation with a specified

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characteristic is reduced to the problem of finding the solutions of a Beltrami equation, which accomplish the topological mapping of one region into another and which the author terms the homeomorphisms of the Beltrami equation. An expression is provided for the generalization of the solution of the Beltrami equations which permits the expansion of the generalization of many properties of the analytical functions of one complex variable to the solutions of Beltrami equations. For example, without changes such important properties are conserved as the principle of the argument, the principle of the maximum modulus, the theory of uniqueness (the isolations of the nulls), et al. There are 5 references (3 Russian-language Soviet and 2 English-language, of which one in Russian translation).

VEKUA, I.N.

Some properties of solutions of the Gauss equation. Trudy Mat.inst. 64:5-8 '61. (MIRA 15:3)
(Curvature) (Geometry, Differential)

Vekua, I. N.

PHASE I BOOK EXPLOITATION SOV/6201

Vsesoyuznyy s"yezd po teoreticheskoy i prikladnoy mekhanike. 1st, Moscow, 1960.

Trudy Vsesoyuznogo s"yezda po teoreticheskoy i prikladnoy mekhanike, 27 yanvarya -- 3 fevralya 1960 g. Obzornyye doklady (Transactions of the All-Union Congress on Theoretical and Applied Mechanics, 27 January to 3 February 1960. Summary Reports). Moscow, Izd-vo AN SSSR, 1962. 467 p. 3000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Natsional'nyy komitet SSSR po teoreticheskoy i prikladnoy mekhanike.

Editorial Board: L. I. Sedov, Chairman; V. V. Sokolovskiy, Deputy Chairman; G. S. Shapiro, Scientific Secretary; G. Yu. Dzhanelidze, S. V. Kalinin, L. G. Loytsyanskiy, A. I. Lur'ye, G. K. Mikhaylov, G. I. Petrov, and V. V. Rumyantsev; Resp. Ed.: L. I. Sedov; Ed. of Publishing House: A. G. Chakhirov; Tech. Ed.: R. A. Zamarayeva.

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(25)

PURPOSE: This book is intended for scientific and engineering personnel who are interested in recent work in theoretical and applied mechanics.

COVERAGE: The articles included in these transactions are arranged by general subject matter under the following heads: general and applied mechanics (5 papers), fluid mechanics (10 papers), and the mechanics of rigid bodies (8 papers). Besides the organizational personnel of the congress, no personalities are mentioned. Six of the papers in the present collection have no references; the remaining 17 contain approximately 1400 references in Russian, Ukrainian, English, German, Czechoslovak, Rumanian, French, Italian, and Dutch.

TABLE OF CONTENTS:

SECTION I. GENERAL AND APPLIED MECHANICS

VEKUA, I.N., akademik

New principles of teaching. Nauka i zhizn' 29 no.1:7 Ja '62.
(MIRA 15:3)

1. Rektor Novosibirskogo gosudarstvennogo universiteta.
(Novosibirsk University)

VEKUA, I.N., akademik

Fixed singular points of generalized analytic functions. Dokl. AN SSSR 145 no.1:24-26 Jl '62. (MIRA 15:7)
(Functions, Analytic)

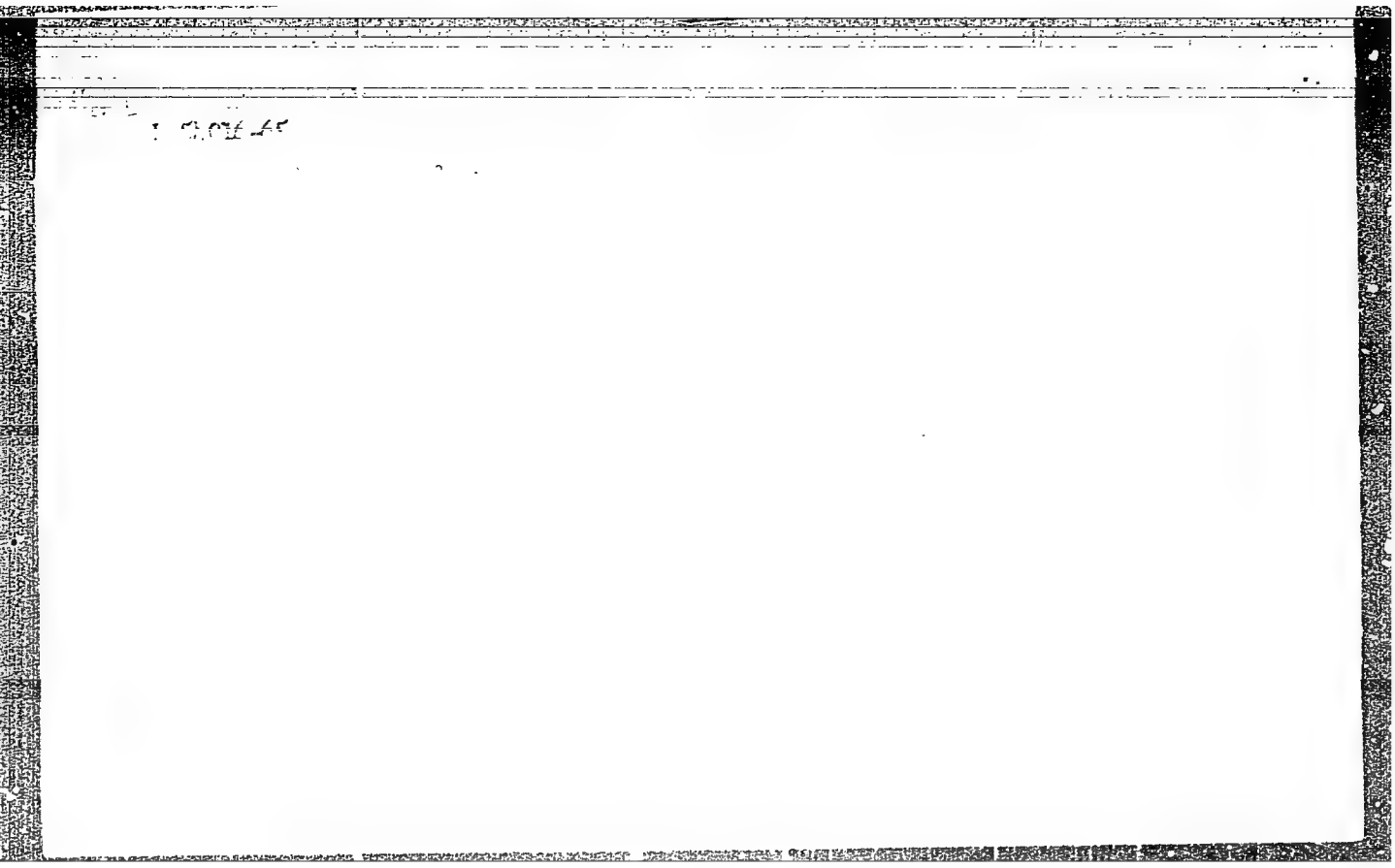
VEKUA, I.N., akademik

University at the Siberian Science Center. Vest. AN SSSR
34 no.6:12-20 Je '64 (MIRA 17:8)

1. Rektor Novosibirskogo universiteta.

VEKUA, Il'ya Nestorovich

[Fundamentals of tensor analysis; materials for the special course "Mathematical theory of shells" (read to students of Novosibirsk State University)] Osnovy tenzornogo analiza; materialy k spetskursu "Matematicheskaia teoriia obolochek" (prochitan dlia studentov NGU). Novosibirsk, Novosibirskii gos. univ., 1964. 138 p. (MIRA 18:12)



VEKUA, Il'ya Nestorovich

[A variant of the thin shallow shells theory; lectures for a specialized course "Mathematical theory of shells"] Ob odnom variante teorii tonkikh pologikh obolochek; lektsii po spetskursu "Matematicheskaia teoriia obolochek." Novosibirsk, Novosibirskii gos.univ., 1964. 67 p. (MIRA 17:11)

VEKUA, Il'ya Nestorovich

[Theory of thin and shallow shells of variable thickness; lectures for a special course in the "Mathematical theory of shells] Teoriia tonkikh i pologikh obolochek peremennoi tolshchiny; lektsii po spetskursu "Matematicheskaia teoriia obolochek." Novosibirsk, Novosibirskii gos.univ., 1964. 38 p. (MIRA 17:10)

S/169/62/000/005/084/093
D228/D307

3,9110

AUTHORS: Nolia, M. and Vekua, L.

TITLE: Results of investigating the secular variation at points near the Dushetskaya magnitnaya observatoriya (Dusheti Magnetic Observatory)

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 5, 1962, 28, abstract 5G201 (Tr. Tbilissk. un-ta, 86, 1960, 57-62)

TEXT: The results of investigations of local anomalies of the secular variation, carried out in 1952-1955 and 1958, are stated. The values of ΔZ were determined by a vertical magnetic balance on 9 traverses, on which the points of observation were located every 2 - 3 km. It is concluded that each point has its individual secular variation of an oscillatory character, as a result of which the secular variation for nearby points may appear to be approximately identical over a somewhat long interval of time. [Abstracter's note: Complete translation.]

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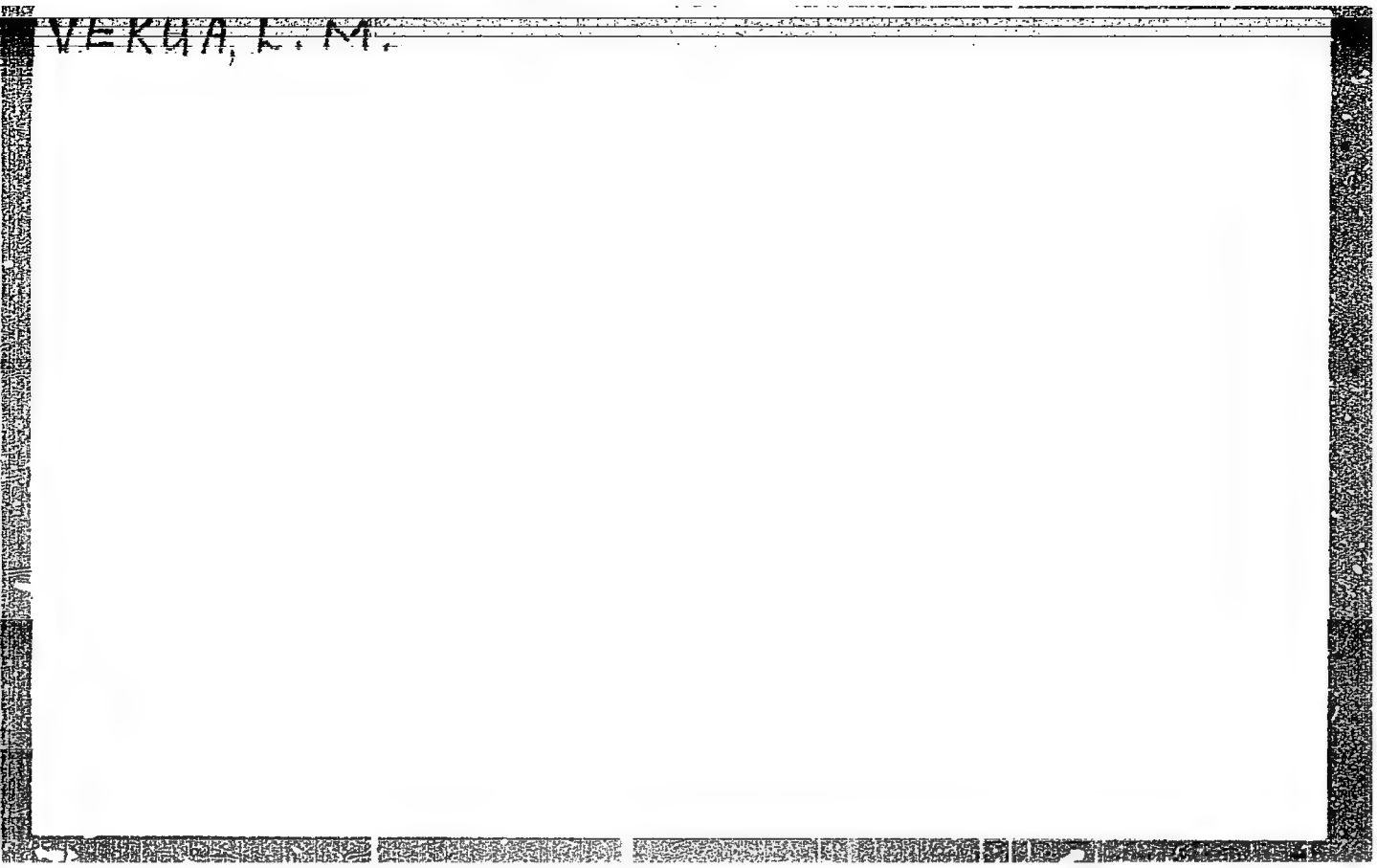

NODIA, M.Z.; VEKUA, L.V.

Methodology for use in studying paleomagnetic changes.
Soob.AN Gruz.SSR 23 no.3:277-279 S '59.
(MIRA 13:3)

1. Tbilisskiy gosudarstvennyy universitet im.Stalina. Predstavleno akademikom V.D.Kupradze.
(Magnetism, Terrestrial)

VEKUA, I.V.

Some results of paleomagnetic investigation of eruptive rocks in Georgia. Izv. AN SSSR. Ser. geofiz. no.11:1668-1673 N '61. (MIRA 14:11)

1. Tbilisskiy gosudarstvennyy universitet im. Stalina.
(Georgia--Rocks--Magnetic properties)

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ACC NR: AP6018934 (N) SOURCE CODE: UR/0203/66/006/003/0613/0614

32
30
13

AUTHOR: Nodia, M. Z.; Vekua, L. V.; Chelidze, Z. A.; Pavlenishvili, Ye. Sh.

ORG: Tbilisi State University (Tbilisskiy gosudarstvennyy universitet)

TITLE: A method for studying the secular variations of the Earth's magnetic field before our era

SOURCE: Geomagnetizm i aeronomiya, v. 6, no. 3, 1966, 613-614

TOPIC TAGS: geomagnetic field, earth magnetic field, secular variation, paleontology

ABSTRACT: In order to obtain data on the secular variations of the Earth's magnetic field before our era, the authors collected more than 300 samples of 50 objects, for six of which the directions of the astronomic meridian were determined. Since these objects were only roughly dated, they could not be subjected to conventional research techniques and a new method for studying the secular variations of accumulation on the basis of these objects had to be devised. Recent theoretical work indicates that the absolute intensity value of the earth's magnetic field undergoes variations, the periodicity of which has yet to be established. On the basis of paleomagnetic data it may be assumed that this period is not less than 5,000 years, while the period of secular accumulation variations is in the order of 1,000 years. It one uses as a point of

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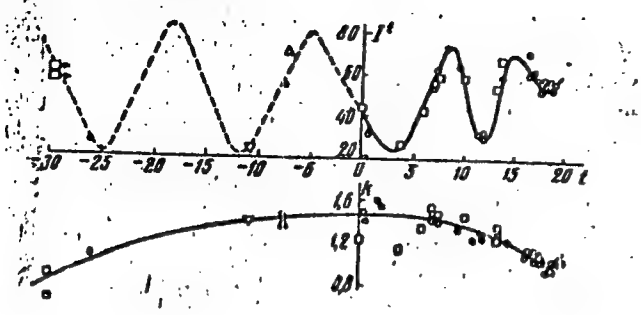

Fig. 1

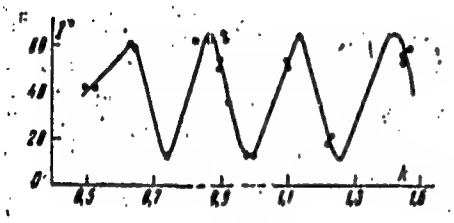

Fig. 2

departure the curve k = f(t) before our era (Fig. 1) and if a curve I = f(t) is plotted in conformity with measured values, such a curve will appear as shown in Fig. 2. It is clear from an analysis of this curve that the character of the cumulative change was sinusoidal even before our era for the territory of the Georgian SSR, while the double amplitude lies in a range of 10—60°. If these results are compared with S. P. Burlatskaya's curve (Sb. "Magnetizm gornykh porod i paleomagnetizm". Izd-yo SO AN SSSR, 1963, 245), all the points will be found to lie on Burlatskaya's hypothetical curve (Fig. 3). The points for samples ascribed to the earlies eras, for which k = 0.5, agree well with the logical extension of the k = f(t) curve, by which they can be tentatively dated as belonging to the 35th century B. C. The

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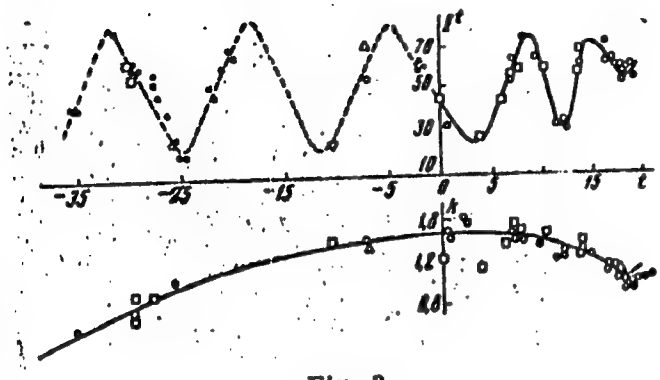


Fig. 3

cumulative value of these items, equal to 39—40°, falls quite satisfactorily on the descending branch of the sine curve I = f(t) (Fig. 3). Thus, complete agreement is observed between the authors' results and those of Burlatskaya. In conclusion, the authors wish to express their gratitude to G. N. Petrova and S. P. Burlatskaya for their help. Orig. art. has: 3 figures.

SUB CODE: 08/ SUBM DATE: 08Jul65/ ORIG REF: 005

Card 3/3

MARUASHVILI, O.M.; BAKRADZE, T.L.; KANDELAKI, N.S.; VEKUA, M.A.; KARDAVA, A.G.

Quinocide therapy in malaria. Med. paraz. i paraz. bol. 27 no.4: 406-408 Jl-Ag '58. (MIRA 12:2)

1. Iz Nauchno-issledovatel'skogo instituta malyarii i meditsinskoy parazitologii imeni prof. S.S. Virsaladze (dir. - prof. O.M. Maruashvili), Respublikanskoy sanitarno-epidemiologicheskoy stantsii Abkhazskoy ASSR (glavnyy vrach V.L. Gvaliya) i Zuglidskoy rayonnoy sanitarno-epidemiologicheskoy stantsii (glavnyy vrach B.K. Gobechiya).
(ANTIMALARIALS, ther. use,
quinocide (Rus))

VEKUA, M. A., ZEMIN, I. A. and CHERNOVA, G. P.

"Treatment of Using Domestic Cheopodium Oil in Cases of Ascaridiasis and Ancylostomiasis", Med. Paraz. i Paraz. Bolez., Vol. 17, No. 5, pp 433-34, 1948.

VEKUA, M. A., TSETSKHLADZE, M. I. and SMIRNOVA, G. P.

"Treatment of Ancylostomiasis With Chenopodium Oil", Med. Paraz. i Paraz. Bolez., Vol. 17, No. 5, pp 434-35, 1948.

VEKUA, M.L.

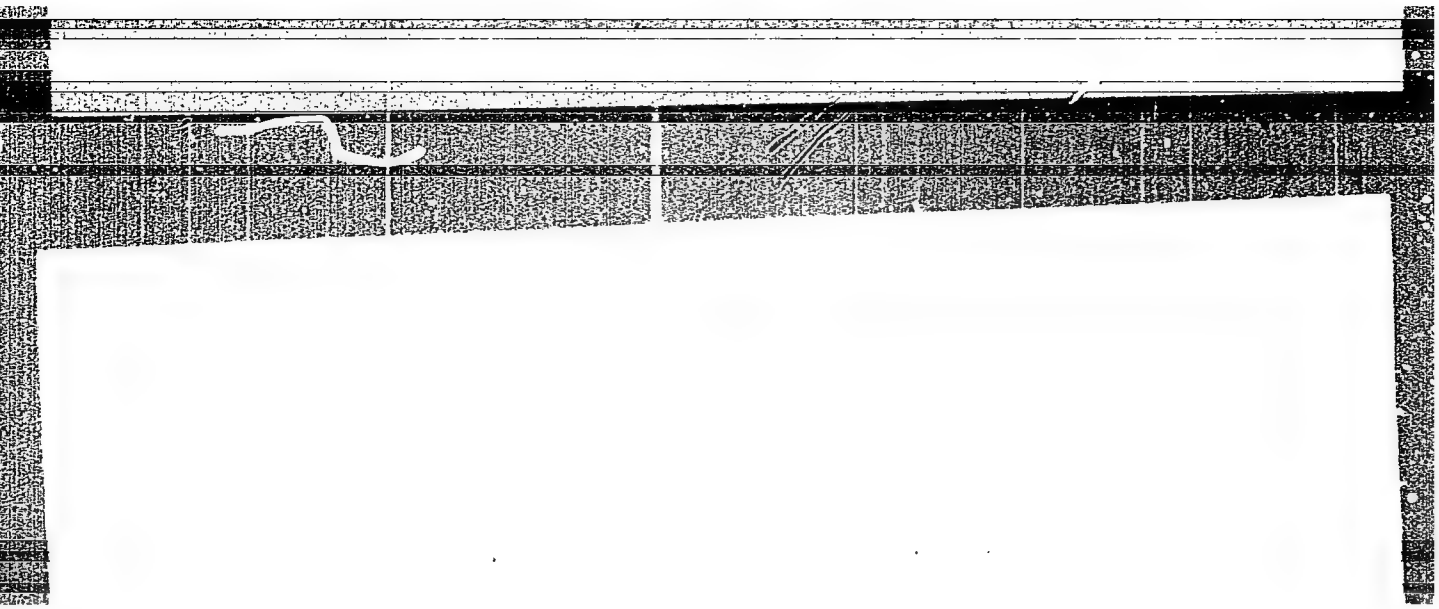
New species of Ostracoda from Cimmerian sediments in Abkhazia.
Soob. AN Gruz. SSR 39 no.2:371-373 Ag '65. (MIRA 18:9)

1. Institut paleobiologii AN Gruz. SSR. Submitted February 24, 1965.

VEKUA, N. I., Candidate Med Sci (diss) -- "The effect of bottled Avadkhar mineral water (drilled well No 1) on the external secretory function of the pancreas of patients with chronic cholecystitis and gastritis". Moscow, 1959. 11 pp (Min Health RSFSR, State Inst of Spa Studies and Physiotherapy), 200 copies (KL, No 24, 1959, 149)

Integral'nyye uravneniya tipa vol'-terra s integralom v smysle Adamara. Tbilisi, soobshch. Gr. fil. an, i (1940), 503.

SO: Mathematics in the USSR, 1917-1947
edited by Kurosh, A. G.
Markushevich, A. I.
Rashevskiy, P. K.
Moscow, Leningrad, 1948



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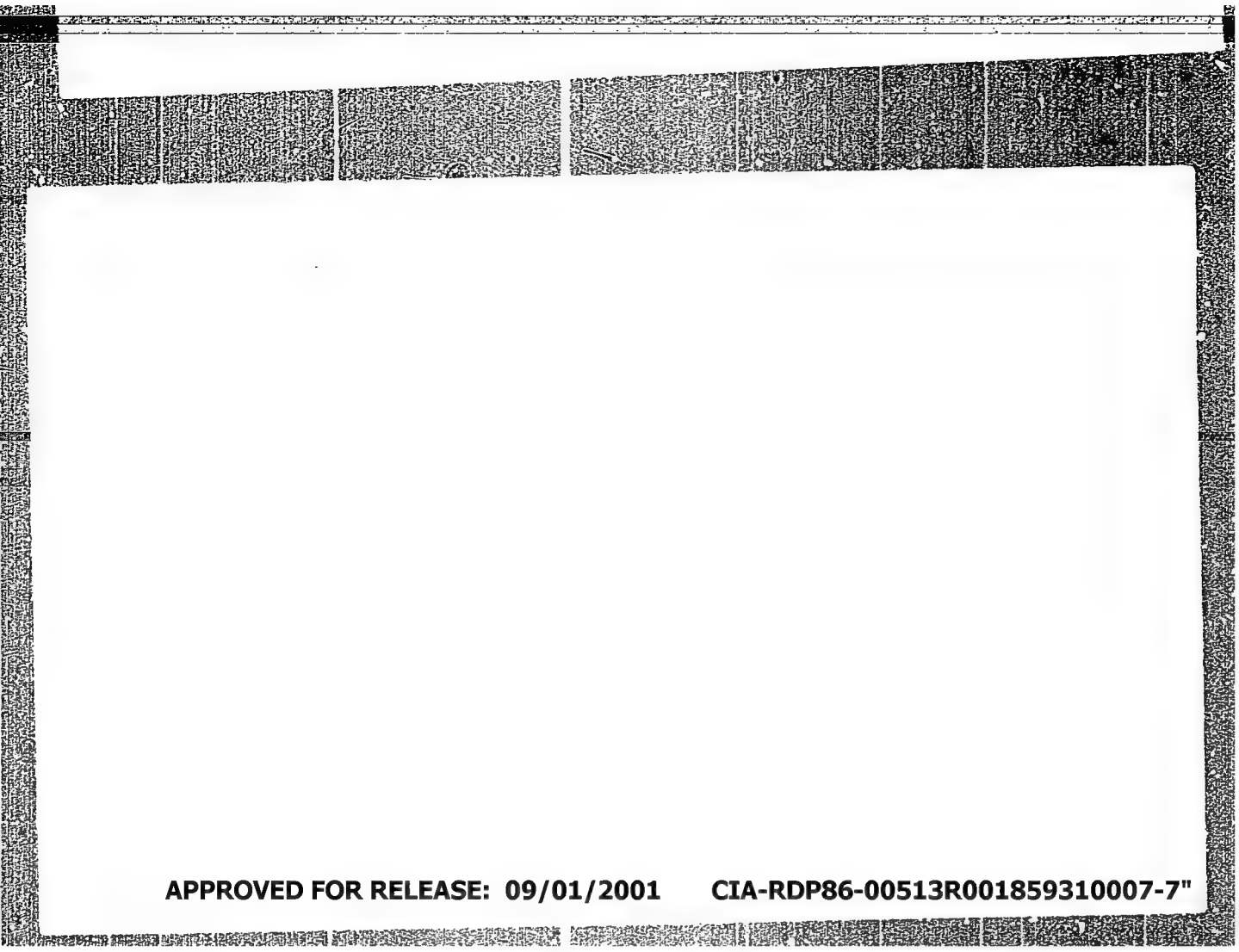


VEKUA, N.P.

Generalization of a Hilbert boundary problem for several unknown functions. Soob.AN Gruz.SSR 8 no.9/10:577-584 '47. (MLRA 9:7)

1.Akademiya nauk Gruzinskoy SSR, Tbilisskiy matematicheskiy institut imeni A.M.Razmadze. Predstavleno akademikom N.I.Muskhelishvili.
(Differential equations) (Integral equations)

VEKUA, N.P.

A generalized system of singular integral equations. Soob.AN Gruz.SSR 9 no.3:153-160 '48. (MLRA 9:7)

1.Akademiya nauk Gruzinskoy SSR, Tbilisskiy matematicheskiy institut imeni A.M.Razmadze.
(Integral equations)

Vekua, N. P. The generalized Hilbert boundary problem for several unknown functions. Akad. Nauk Gruzin. SSR. Trudy Tbilis. Mat. Inst. Razmadze 16, 81–103 (1948). (Georgian. Russian summary)

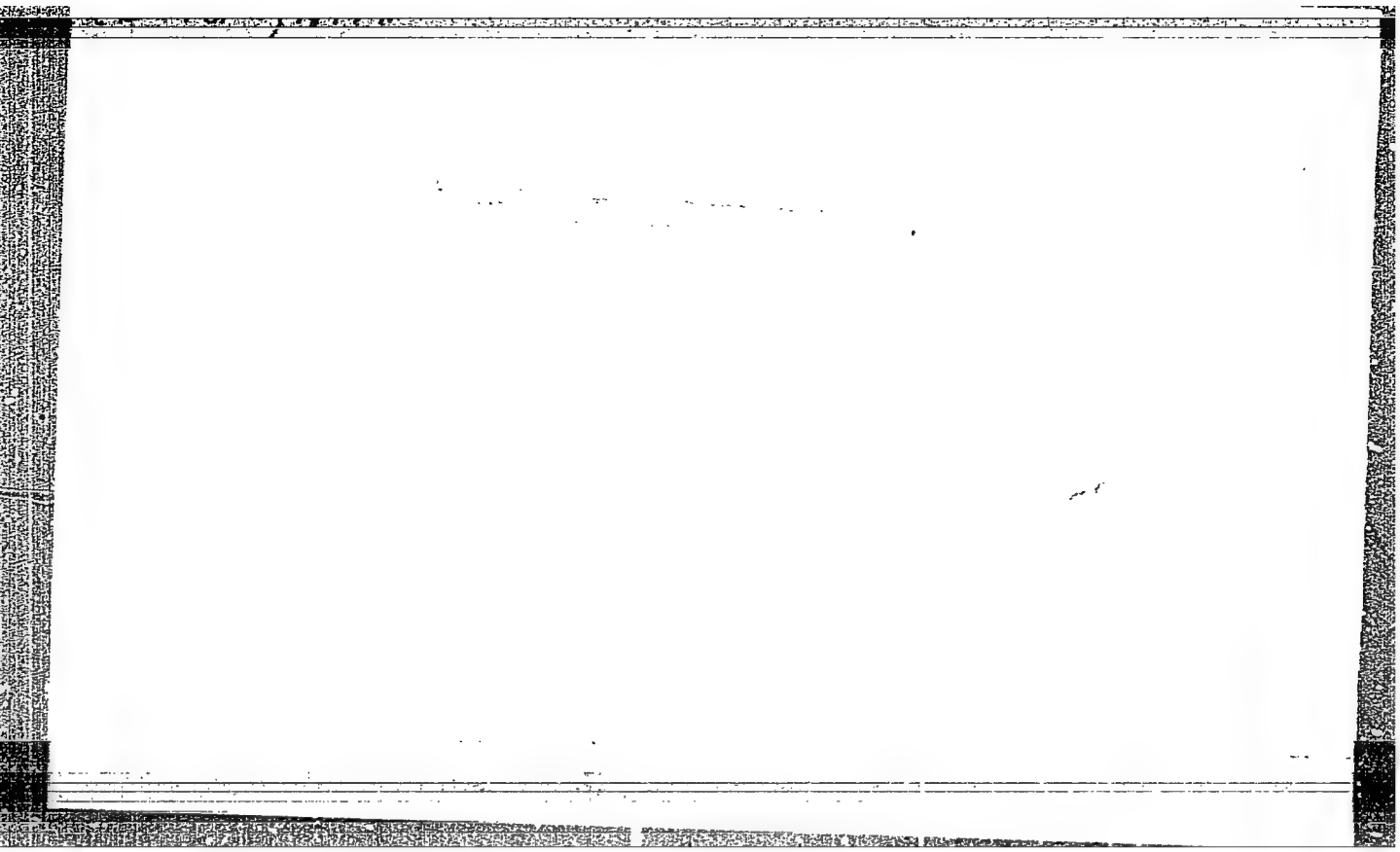
"The basic results have been announced in the Soobščeniya Akad. Nauk Gruzin. SSR 8, 577–584 (1947)" [see the paper reviewed above].

From the author's summary.

SOV: MATHEMATICAL REVIEW (Unclassified)
Vol XIV No 2, Feb 1953 pp 121-232

Vekua, N. "On certain marginal problems of the theory of the logarithmic potential," Trudy Tbilis. gos. un-ta im. Stalina, Vol. XXXIV, a-c, 1948, p. 311-27, (In Georgian, resume in Russian)

SO: U-4934, 29 Oct 53, (Letopis 'Zhurnal 'nykh Statey, No. 16, 1949).



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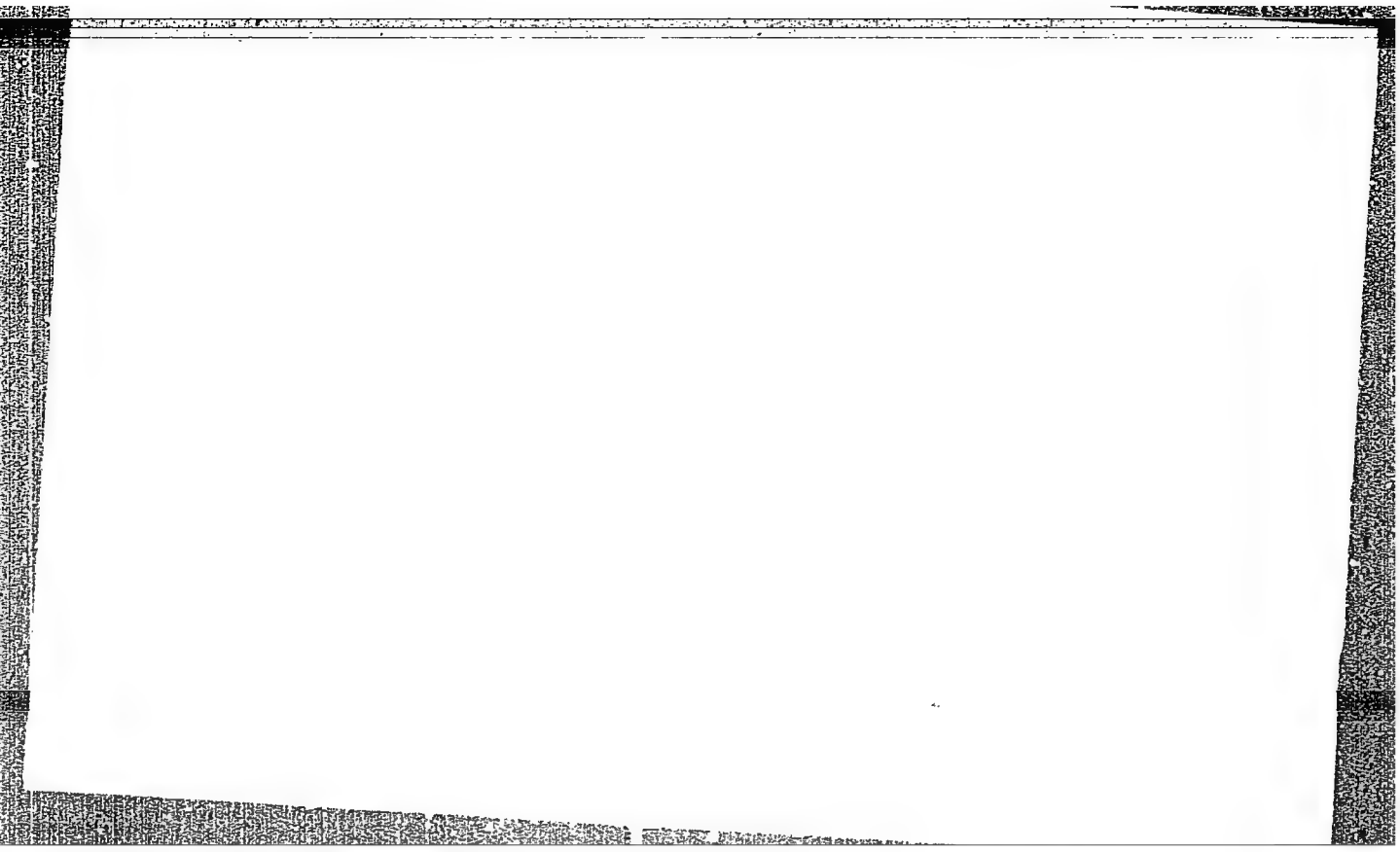

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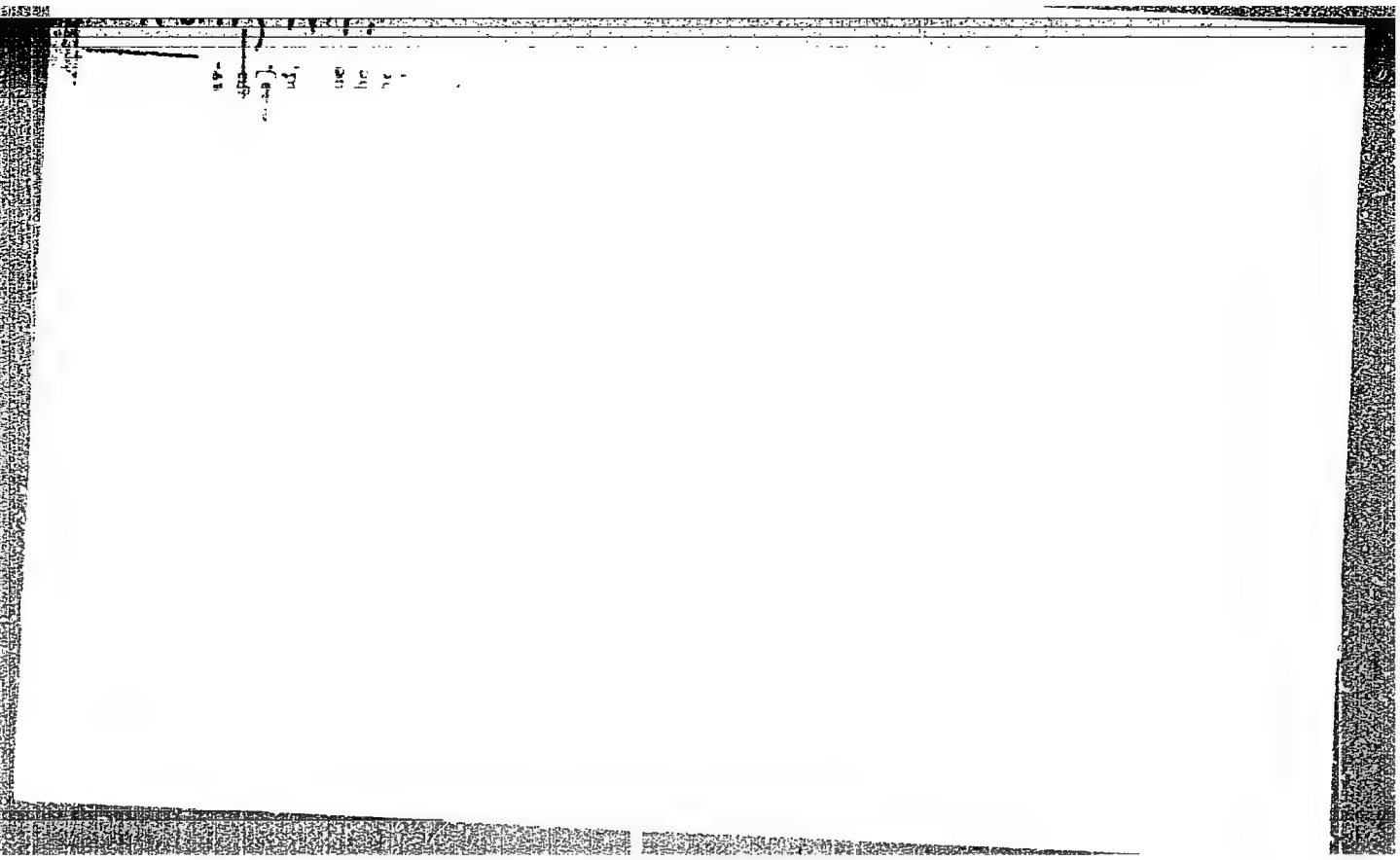

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VEKUA, N. P.

"Hilbert's Boundary Problem for Several Unknown Functions in the Case of Unconnected Regions," Soob. AN Georgian SSR, No.11, pp. 533-538, 1950

Mathematical Review, Vol. 14, No.8, pp. 713-830, 1953

VEKUA, N.P.

Mathematical Reviews
Vol. 14 No. 8
Sept. 1953
Analysis

6-23-54
LC

Vekua, N. P. On a problem of Hilbert with discontinuous coefficients and its application to singular integral equations. Akad. Nauk Gruzin. SSR. Trudy Mat. Inst. Razmadze 18, 307–343 (1951). (Russian. Georgian summary)

Let L be a regular closed contour, bounding a connected domain D^+ in the plane ω; $D^-=\omega-(D^++L)$; $\phi(z)$ is piecewise analytic if $\phi(z)$ is analytic in D^+ and in D^- (for $z\neq\infty$) and if ϕ can be continuously extended on L from either side, except perhaps for a finite number of points c_i in the vicinity of which $\phi(z)=O(|z-c_i|^{-\alpha})$ $(0\leq\alpha<1)$. The problem considered is to find a piecewise analytic ϕ, of finite order at ∞, so that (1) $\phi^+=G_0\phi^-+g_0$. When G_0, g_0 are in H on L and G_0 is nowhere zero on L, the complete solution of (1) is already known; the same can be said of a corresponding type (2) of singular integral equations. The author solves the problem (1) and the equation (2) when G_0 (and a certain appropriate function in the case of (2)) is allowed to have at some points of L discontinuities of order <1 or zeros of order <1. These developments naturally involve canonic solutions and the use of the index.

W. J. Trjitzinsky (Urbana, Ill.).

VEKUA, N. P.

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Mathematical Reviews
Vol. 14 No. 10
Nov. 1953
Analysis

7-14-54
LL

Vekua, N. P. The Carleman boundary problem for several unknown functions. Soobščenija Akad. Nauk Gruzin. SSR 13, 9-14 (1952). (Russian)

Let L be a simple, closed, smooth contour limiting a bounded domain D^+ in the complex plane ω of $z=x+iy$; $D^-=\omega-(D^++L)$; the origin of the coordinates is in D^+; the angle made by the tangent to L is of class H (Hölder); $\alpha(t)$ is assigned in H on L, $\alpha'(t)\neq 0$ and $\alpha(t)$ transforms L one-to-one on itself, changing direction. It is said that $\phi(z)$ is meromorphic in D^+ (in D^-) if ϕ is analytic in D^+ (in D^-), except possibly at a finite number at most of poles, and if ϕ is continuously extendable on L. The author solves the following problem: to find a vector $\phi=(\phi_1, \cdots, \phi_n)$ meromorphic in D^+ so that (1) $\phi^+[\alpha(t_0)]=G(t_0)\phi^+(t_0)+g(t_0)$ (on L), the matrix $G(t_0)=(G_{kj}(t_0))$ $(k, j=1, \cdots, n)$ and the vector $g(t_0)=(g_1, \cdots, g_n)$ being assigned in H. The case $n=1$, $\alpha[\alpha(t)]\equiv t$ has been solved by D. A. Kveselava [Akad. Nauk Gruzin. SSR. Trudy Tbiliss. Mat. Inst. Razmadze 16, 39-80 (1948); these Rev. 14, 152]. The homogeneous problem (1), when $n=1$ and $\alpha[\alpha(t)]\equiv t$, had been considered by T. Carleman [Verh. Internat. Math.-Kongresses, Zürich, 1932, v. 1, Füssli, Zürich-Leipzig, 1932, pp. 134-151]. The author solves the problem completely with the aid of the theory of integral equations in the sense of principal values.

W. J. Trjitzinsky (Urbana, Ill.)

VEKUA, N. P.

USSR/Mathematics - Boundary-Value Problem, Complex Variable   Mar/Apr 52

"A Boundary-Value Problem in the Theory of Functions of a Complex Variable For Several Unknown Functions," N. P. Vekua

"Iz Ak Nauk SSSR, Ser Matemat" Vol XVI, No 2, pp 157-180

Devoted to the soln of 2 boundary-value problems in the theory of functions of a complex variable. One of these problems is a generalization to the case of several unknown functions in the problem set up by T. Carleman. The other problem is a

206T72

USSR/Mathematics - Boundary-Value Problem, Complex Variable (Contd)   Mar/Apr 52

generalization of Riemann's problem for a system of eqs. Submitted by Acad N. I. Muskhelishvili 9 Nov 51.

206T72

Vekua, N. P. On a problem of the theory of functions of a complex variable. Doklady Akad. Nauk SSSR (N.S.) 86, 457–460 (1952). (Russian)

Let L be a set of simple, closed, suitably smooth, disjoint curves in the plane, limiting a connected bounded domain D^+; D^- is the complement of $D^+ + L$. The author solves the problem (an extension of a problem of Hilbert) of finding a piecewise analytic vector $\Phi(s)$, of finite order at ∞, so that on L one has $\Phi^+ = A\Phi^- + B\Phi^- + g$, where the vector g and square matrices A, B are assigned of class H (Hölder). The method used is that of integral equations in the sense of principal values. *W. J. Trjitzinsky* (Urbana, Ill.).

MATHEMATICAL Reviews (unclassified)
Vol. 5, May 1953, pp 439-522

VEKUA, N. P.

Vekua, N. P. On a boundary problem of linear relationship. Doklady Akad. Nauk SSSR (N.S.) 94, 173-176 (1954). (Russian) 62

Let D^+ be a bounded, connected domain in the plane of $z = x + iy$, its frontier L being smooth and closed, $D^- = D^+ + L$; ... in D ... the angle between the tangent to L and a ...

SSR [illegible] ... these Rev. 14, [illegible] 52 and [illegible] ... author, Izvestiya Akad. Nauk SSSR [illegible] 16 [illegible] 1952; these Rev. 14, [illegible]

SUBJECT USSR/MATHEMATICS/Integral equations CARD 1/2 PG - 139

AUTHOR VEKUA N.P.

TITLE On a boundary value problem of the linear conjugateness for several unknown functions with given displacements.

PERIODICAL Trudy Tbilissk. mat. Inst. Razmadze 21, 169-189 (1955)

reviewed 7/1956

Let D^+ be a finite domain in the plane of the complex variable $z = x + iy$ which is bounded by a simple closed, smooth curve L. The positive direction of L be that which lets D^+ at the left hand side. It is assumed that the angle which the tangent forms at L with a fixed direction, satisfies a Hölder condition. The functions $\alpha_k(t)$, $k=1,\ldots,n$, given on L may have derivatives which are different from zero and may satisfy a Hölder condition; $\alpha_k(t)$ may map L biuniquely onto itself by inversion of the orientation. The problem of the present paper is to determine two meromorphic vectors $\varphi(z) = (\varphi_1,\ldots,\varphi_n)$, $\psi(z) = (\psi_1,\ldots,\psi_n)$ in D^+ which satisfy the boundary condition

$$\varphi_j^+[\alpha_j(t_o)] = \sum_{k=1}^{n} G_{jk}(t_o)\psi_k^+(t_o) + g_j(t_o) \qquad (j=1,\ldots,n) \tag{1}$$

here $G_{jk}(t_o)$, $g_j(t_o)$ are functions given on L which satisfy a Hölder condition,

Trudy Tbilissk. mat. Inst. Razmadze 21, 169-189 (1955) CARD 2/2 PG - 139

with the determinant $\|G_{jk}(t_0)\|$ nowhere vanishing on L. From this boundary value problem, for $\alpha_1(t) = \ldots = \alpha_n(t)$ one obtains the problem which the author has treated in an earlier paper (Izvestija Akad. Nauk 16, 157-180 (1952)). The well known boundary value problem for several unknown functions due to Carleman results from this for:

(2) $$\varphi^+[\alpha(t_0)] = G(t_0)\,\varphi^-(t_0) + g(t_0),$$

where $G(t_0) = \|G_{jk}(t_0)\|$, $g(t_0) = (g_1, \ldots, g_n)$. Carleman has considered the homogenous problem in the case $n = 1$, $\alpha[\alpha(t)] \equiv t$ but he has not given its complete solution. For $n = 1$, $\alpha[\alpha(t)] = t$ the problem (2) has been solved by Kveselava (Trudy Tbilissk.mat.Inst.Razmadze 16, 39-80(1948). For several unknown functions the author (l.c.) has solved the problem (2) under the condition

(3) $$\alpha[\alpha(t)] = t.$$

In the first part of the present paper the problem (1) is solved, in the second part the solution of Carleman's problem (2) for the case that (3) is replaced by the condition

(4) $$\alpha^m(t) = t, \qquad m > 0 \text{ even},$$

(where $\alpha^m(t) = \alpha[\alpha^{m-1}(t)]$ denotes the m-fold iterate of $\alpha(t)$) is given. The method consists in the fact that the problem is reduced to certain systems of singulary integral equations of the normal type; it then leads to the general solution of the considered problems.

VEKUA, N.P.

A boundary problem of linear conjugation [with summary in Russian].
Trudy Mat. inst. AN Gruz. SSR 24:125-134 '57. (MIRA 11:3)
(Functions of complex variables)

VEKUA, N.P.

A system of singular integrodifferential equations and its application to linear conjugation problems. Trudy Mat. inst. AN Gruz. SSR 24:135-147 '57. (MIRA 11:3)

(Integral equations) (Elasticity)

VEKUA, N.P.

One differential boundary problem with linear conjugation for certain unknown functions in the case of interrupted contours. Soob.AN Gruz.SSR 21 no.5:513-518 N '58. (MIRA 12:5)

1. AN GruzSSR, Tbilisskiy matematicheskiy institut im. A.M. Razmadze. Chlen-korrespondent AN GruzSSR.
(Vector analysis) (Integral equations)

VEKUA, N.P.

One boundary problem with linear conjugation for several unknown functions. Soob.AN Gruz.SSR 22 no.1:3-8 Ja '59.
(MIRA 12:5)

1. AN GruzSSR, Tbilisskiy matematicheskiy institut im. A.M. Razmadze. Chlen-korrespondent AN GruzSSR.
(Integral equations)
(Vector analysis)

36992

16.4500

S/044/62/000/003/036/092
C111/C444

AUTHOR: Vekua, N. P.

TITLE: On a method for the solution of singular integro-differential equations

PERIODICAL: Referativnyy zhurnal, Matematika, no. 3, 1962, 69, 70, abstract 3B294. ("Soobshch. AN Gruz SSR,", 1959, 23, no. 2, 129-134)

TEXT: It is shown that the solution of the system of integro-differential equations

$$A(t)\frac{du(t)}{dt} + B(t)u(t) + \int_L \frac{K(t,\xi)\,u(\xi) + \Gamma(t,\xi)\frac{du(\xi)}{d\xi}}{\xi - t}\,d\xi = f(t)$$

can be reduced to the solution of the system of integral equations

$$\mu(t) + \int_L \left[\frac{b(t,\xi)}{\xi - t} + \Phi(t,\xi)\right]\mu(\xi)\,d\xi = \varphi(t) \qquad (1)$$

by use of the method of A. I. Nekrasov (Ob odnom klasse integro-diffe-

Card 1/2

On a method for the solution ...

S/044/62/000/003/036/092
C111/C444

rentsial'nykh uravneniy [On a class of integro-differential equations] Tr. Ts AGI, 1934, no. 190).
$A(t)$, $B(t)$, $K(t,\xi)$, $\Gamma(t,\xi)$, $b(t,\xi)$, $\varphi(t,\xi)$ are $n \times n$ matrices, L is an open smooth curve of the complex plane. (1) is a singular integral equation of the normal type, if there is

$$\det (E \pm \Gamma(t, t)\, A^{-1}(t)) \neq 0 .$$

[Abstracter's note: Complete translation.]

Card 2/2

16.4500

S/044/62/000/006/034/127
B158/B112

AUTHORS: Vekua, N. P., Isakhanov, R. S.

TITLE: One class of singular integral equations effectively solvable

PERIODICAL: Referativnyy zhurnal. Matematika, no. 6, 1962, 77, abstract 6B324 (Soobshch. AN GruzSSR, v. 23, no. 3, 1959, 257 - 264)

TEXT: A linear singular equation

$$a(t_0)\varphi(t_0) + \frac{b(t_0)}{\pi i}\sum_{p=0}^{n-1}\int_{L_0}\frac{\varphi(t)}{t-\omega_p(t_0)}\,dt + \sum_{q=1}^{m}A_q(t_0)\int_{L_0}B_q(t)\varphi(t)\,dt = f(t_0), \qquad (1)$$

where L_0 is a simple closed smooth contour on the plane of a complex variable $\zeta = x + iy$, $a(t_0)$, $b(t_0)$, $A_q(t_0)$, $B_q(t_0)$, $(q = 1, 2, \ldots, m)$. $f(t_0)$ are given functions from the Hölder class, $\varphi(t)$ is an unknown function also from the Hölder class, $\omega_0(t_0) \equiv t_0$, $\omega_1(t_0)$, ..., $\omega_{n-1}(t_0)$ are

Card 1/2

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B158/B112

One class of singular integral ...

linear rational functions forming a group. It is shown that by certain substitutions of the variables this equation may be reduced to an equation integrable in closed form. [Abstracter's note: Complete translation.]

Card 2/2

VEKUA, N.P.

Comments on my article "A boundary problem in linear conjugation for several unknown functions." Soob. AN Gruz. SSR 24 no. 1:3-6 Ja '60. (MIRA 14:5)

1. Akademiya nauk Gruzinskoy SSR, Tbilisskiy matematicheskiy institut im. A.M. Razmadze. Chlen-korrespondent AN GruzSSR. (Differential equations)

32498
S/044/61/000/011/021/049
C111/C444

16.4500

AUTHOR: Yakua, N. P.

TITLE: Linear integrodifferential equations with small parameters at the highest derivatives

PERIODICAL: Referativnyy zhurnal, Matematika, no. 11, 1961, 43, 44, abstract 11B218.(Probl. mekhaniki sploshn.sredy, M., AN SSSR, 1961, 92 - 100)

TEXT: Let

$$L_\varepsilon \rho_\varepsilon \equiv \sum_{k=0}^{l} a_{m+k}\varepsilon^k \rho_\varepsilon^{(m+k)}(t) + \sum_{j=0}^{m-1} [a_j(t)\rho_\varepsilon^{(j)}(t) + A_j]. \quad (1)$$

where

$$A_j \equiv \int_0^t K_j(t,\tau)\rho_\varepsilon^{(j)}(\tau)\,d\tau, \quad a_{m+k} = \text{const}\ (k = 0,1,\ldots,l).$$

$a_m \neq 0$, $a_{m+1} = 1$, $a_j(t)$ is continuous on $[0, 1]$, $(j = 0, \ldots, m-1)$, ε is a small parameter, $k_j(t,\tau)$ is continuous for $t, \tau \in [0, 1]$. Considered is the Cauchy problem (k_ε) for the equation $L_\varepsilon \rho_\varepsilon(t) = f_\varepsilon(t)$

Card 1/3

Linear integrodifferential equation...

with the initial conditions $\rho^{(j)}(0) = 0$ $(j = 0, 1, \ldots, m+l-1)$; one supposes that for the continuous function $f_\varepsilon(t)$ it holds $f_\varepsilon(t) = f(t) + O(\varepsilon)$, the equation $\sum_{k=0}^{l} a_{m+k} \nu^k = 0$, does not possess any multiple roots, and that the real parts of the roots ν_k are negative. Besides the Cauchy problem (k_0) is considered for the degenerated equation $(\varepsilon = 0)$: $\rho^j(0) = 0$, $(j = 0, 1, \ldots, m-1)$. It is proved that $\lim_{\varepsilon \to 0} \rho_\varepsilon(t) = \rho(t)$, $\rho_\varepsilon(t)$ being the solution of the problem (k_ε), and $\rho(t)$ being the solution of the problem (k_0). Then the problem (k_ε) is investigated for the equation $L^*_\varepsilon \rho_\varepsilon(t) = f_\varepsilon(t)$. $L^*_\varepsilon \rho_\varepsilon$ distinguishes from $L_\varepsilon \rho_\varepsilon$ by the fact that in the second part of (1) there is

$$A_j = \int_0^1 \frac{\Gamma_j(t, \tau) \rho_\varepsilon^{(j)}(\tau)}{\tau - t} d\tau,$$

where the integral is understood in the sense of the Cauchy principal

Card 2/3

32498
S/044/61/000/011/021/049
C111/C444

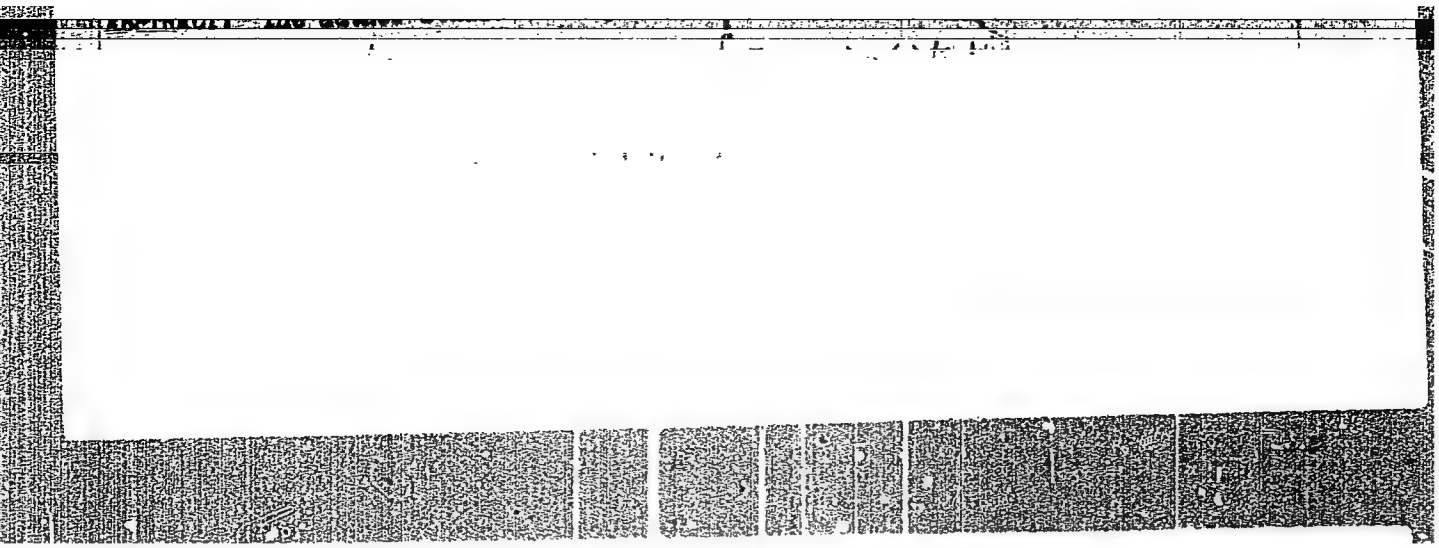
Linear integrodifferential equation . value, and $\Gamma_j(t, \tau)$ satisfies the Hölder condition on $[0, 1]$ with respect to both variables. Besides the problem (k_0) is considered for the degenerated equation. It is proved that if the problem (k_0) does possess a unique solution in this last case, then the problem (k_ε) has a unique solution $\rho_\varepsilon(t)$ for sufficiently small ε, which converges for $\varepsilon \to 0$ to the solution of problem (k_0)

[Abstracter's note: Complete translation]

Card 3/3

VEKUA, N.P.; TSITSKISHVILI, A.R.

All-Union Conference on the Application of Methods of the Theory of Functions to Problems of Mathematical Physics, held at Tbilisi. Usp. mat. nauk 16 no.4:243-247 Jl-Ag '61. (MIRA 14:8)
(Tiflis--Mathematics--Congresses) (Functions)



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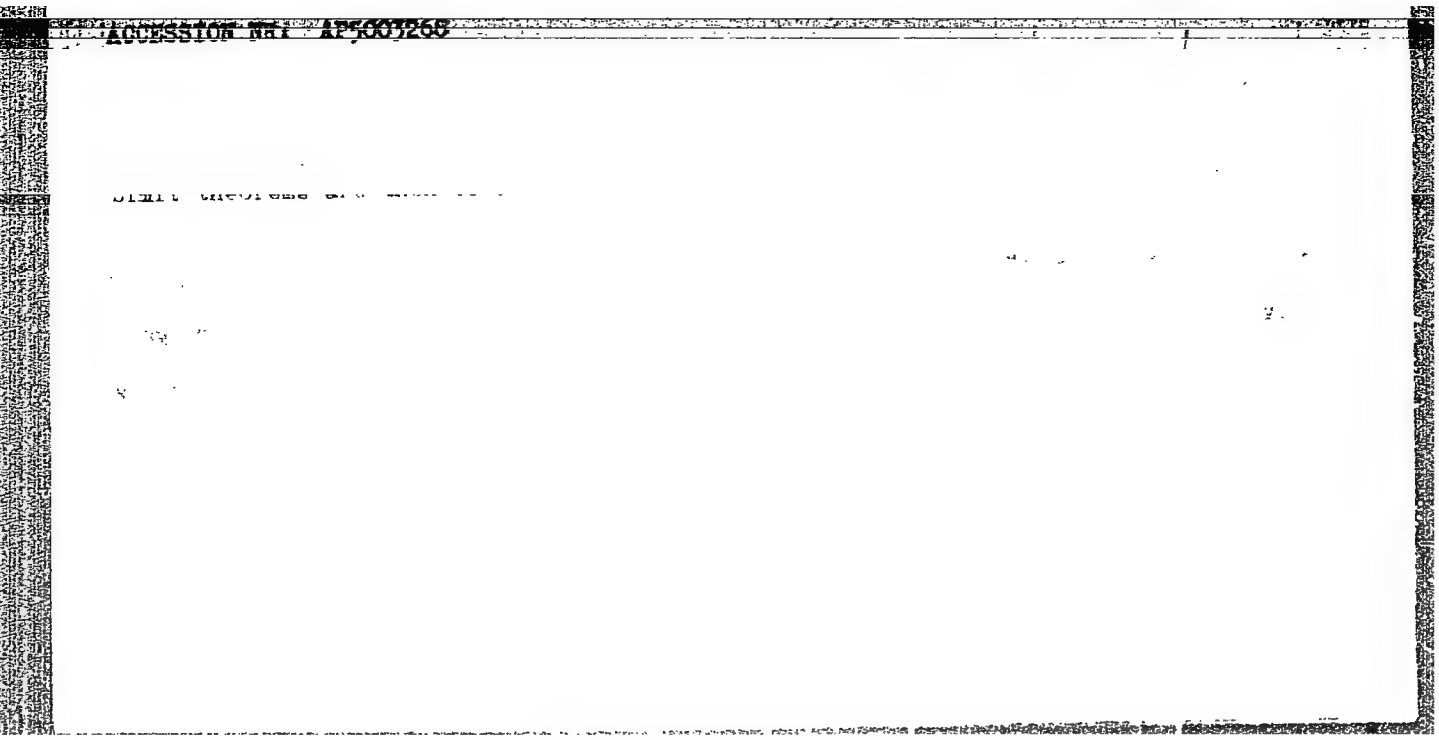

L 45390-66 EWT(d) IJP(c)
ACC NR: AR6016607 SOURCE CODE: UR/0044/65/000/012/B048/B049

AUTHOR: Vekua, N. P.

TITLE: System of nonlinear differential equations with small parameter

SOURCE: Ref. zh. Matematika, Abs. 12B260

REF SOURCE: Tr. Tbilissk. un-ta, v. 110, 1965, 25-32

TOPIC TAGS: nonlinear differential equation, differential equation system, small parameter

ABSTRACT: Consider the system of nonlinear differential equations with small parameter

$$\varepsilon \frac{dx_i}{dt} = X_i(x_1, \ldots, x_n) = p_{i1}x_1 + \ldots + p_{in}x_n + X_i^*(x_1, \ldots, x_n), \quad (1)$$

where $\varepsilon > 0$ is a small parameter, p_{ik} are constants, $X_i^*(x_1, \ldots, x_n)$ in some region $|x_i| < h$ are decomposed into series in powers of $x_1, x_2, \ldots, x_n$, beginning with terms of not less than second order. By using the substitution $t = \varepsilon\tau$, one can rewrite system (1) as:

$$\frac{dx_i}{d\tau} = p_{i1}x + \ldots + p_{in}x_n + X_i^*(x_1, \ldots, x_n). \quad (2)$$

Card 1/2 UDC: 517.917

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ACC NR: AR6016607

Now using known theorems of Lyapunov for this system, one finds that the following assertion holds: Let $\lambda_k = \mu_k + i\nu_k$ be the roots of the characteristic equation of the approximate system

$$\det(P - E\lambda) = 0, \quad (3)$$

where E is the indentity matrix, $P = \|p_{ik}\|$. As $\varepsilon \to 0$ the limit of the solution of the Cauchy problem for system (1) coincides with the solution of the degenerate system if and only if $\mu_k < 0$, i.e., if the solution $x_i = 0$ of system (2) is asymptotically stable. Note, finally, that an analogous assertion holds under more general conditions with respect to X_i and also in many cases where X_i contains the parameter t explicitly. Author's resumé [Translation of abstract]

SUB CODE: 12

hs

Card 2/2

VEKUA, N.P., akademik

Systems of linear integrodifferential equations with a small parameter. Soob. AN Gruz. SSR 29 no. 4:385-391 O '62 (MIRA 19:1)

1. Tbilisskiy matematicheskiy institut imeni Razmadze AN Gruzinskoy SSR. Submitted June 2, 1962.

VEKUA, N.P., akademik

Some integrodifferential equations containing a small parameter. Soob. AN Gruz. SSR 36 no.3:513-519 D '64.

(MIRA 18:3)

1. Tbilisskiy matematicheskiy institut im. A.M. Razmadze AN GruzSSR i AN GruzSSR.

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SO: U-3039, 11 Mar 1953

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VEIANDER, Edv. Prof.

Problems of the automatization of production processes. Archiw automat 5 no.1:85-120 '60. (EEAI 9:6)
(Automation) (Automatic control)

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Design of a gas-cooled heavy water power reactor. Jaderna energie 10 no.11:412-416 N '64.

VELART, W.

Forecast of the Organization for Economic Cooperation and Development on the development of nuclear engineering. Jaderna energie 9 no.7:240 Jl '63.

VEIA RT, W.

Improved small gas cooled FGK reactor. Jaderna energie 9 no.9:299-302 S'63.

VELART, W.

Designs of the chemical nuclear reactors. Jaderna energie 8 no.7:248-253 Jl '62.

VILIM, V.

"Successes and future development of atomic technology in the Soviet Union."

NOVA TECHNIKA. Praha, Czechoslovakia. No, 4, 1959

Monthly list of East European Accessions (EMAI), LC, Vol. 8, No. 6, Jun 59, Uncles

VELART, W.

Moscow store "Isotopy". Jaderna energie 6·no.5:154 My '60.

VELART, W.

The method of separating isomeric atomic nuclei. Jaderna energie 9 no.4:134 Ap '63.

VELART, W.

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YUGOSLAVIA / Chemical Technology. Chemical Products and Their Application. Pharmaceuticals. Vitamines. Antibiotics. H

Abs Jour: Ref Zhur-Khimiya, No 12, 1959, 43394.

Author : Vitorovic O., Velasevic K., Zivanovic D.
Inst : Not given.
Title : Effect of Supersonic Waves on the PVTD Type Dextran.

Orig Pub: Arkhiv farmats., 1958, 8, No 3, 183-187.

Abstract: Supersonic waves (SW) of 800 kcy/sec frequency and of 0.30 v/cm^2 intensity (I), in the course of 15 minutes cause dipolymerization and lowering of viscosity η of the 0.45% water solution of dextran (D) (1 hour after dissolving, 15 min., 6-12°); to cause a change of the 2.65% D solution I of 0.56 v/cm^2 is required. With the increase in I, η and molecular weight decrease proportionally. When I = 1.5 v/cm^2,

Card 1/2

H-42

VAJIC, B., mr. pharm.; VELASEVIC, K., dipl. hem.; SIBALIC, S.

Hemoglobin and protein content of the blood in children fo the district of Kosovo and Metohija. Glasn. hig. inst., Beogr. 3 no.1-2:77-80 Jan-June 54.

(HEMOGLOBIN, determ.
in Yugosl. child.)
(BLOOD PROTEINS, determ.
in Yugosl. child.)

ZEMPLENYI, T.; GANZ, V.; PISA, Z.; technicke spoluprace: VELATOVE, A.

Relation of some U-wave changes to coronary artery diseases and hypertension. Vnitr. lek., Brno 1 no.7:518-527 July 55.

1. Ustav pro choroby obehu krevniho v Praze-Krci, reditel prof. MUDr. Kl. Weber. Ustav pro choroby obehu krevniho v Praze-Krci, Budejovicka 800.
(CORONARY DISEASES, diagnosis
ECG, U wave changes.)
(HYPERTENSION, complications
coronary dis., ECG, U wave changes.)
(ELECTROCARDIOGRAPHY, in various diseases
coronary dis. alone & with hypertension.)

FRONEK, Arnost, MUDR.; GANZ, Vilem, MUDr.; HAMMER, Jan, MUDr.; PISA, Zbynek, MUDr.; ZEMPLENYI, Tibor, MUDr.; za tech. spoluprace: STEIDLOVE, Aloisie; VELATOVE, Anny

Skin resistance in ischemic heart disease. Vnitr. lek., Brno 1 no.5:333-339 May 55.

1. Ustav pro choroby obehu krevniho v Praze-Krci, reditel prof. MUDR. Kl. Weber.

(SKIN, physiology
resist. in ischemic heart dis.)
(HEART DISEASE
ischemic, skin resist.)

FRONEK, A.; GANZ, V.; HAMMER, J.; PISA, Z.; technickou spolupraci: VELATOVE, A.; STEDLOVE, A.

Skin temperature in persons with ischemic heart disease. Vnitr. lek., Brno 1 no.6:435-437 June 55.

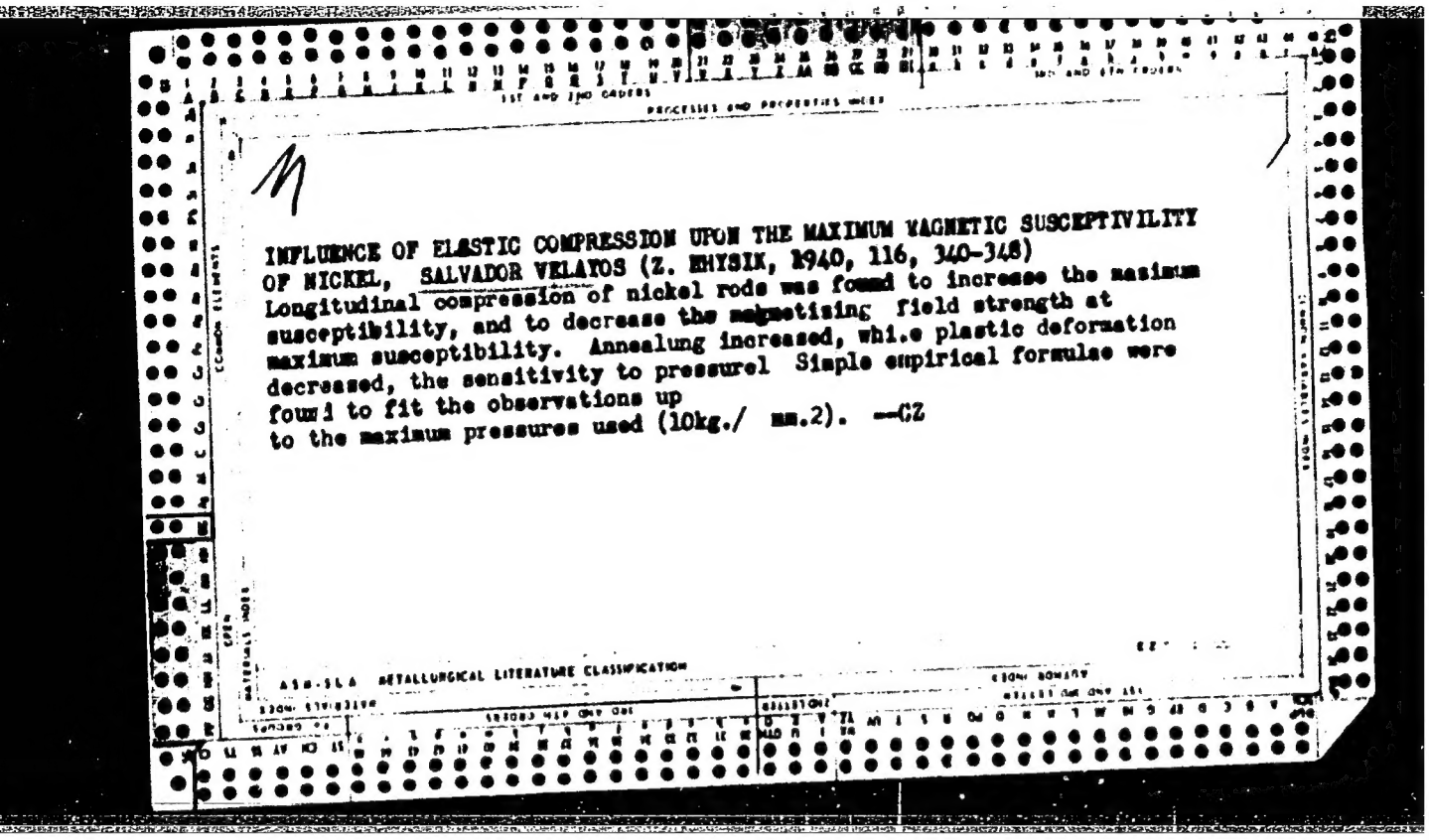
1. Ustav pro choroby obehu krevniho v Praze-Krci, reditel prof. Dr. Kl. Weber.

(HEART DISEASE
ischemic, skin temperature.)
(SKIN, in various diseases
heart dis., ischemic, temperature measurement.)
(BODY TEMPERATURE
skin in ischemic heart dis.)

HOSTOMSKA, L.; WENKE, M.; Technicka spoluprace: J. Labska, M. Velatova, V. Orhtenhalova, J. Vetvickova

Disorders of reflex regulation of blood sugar in diabetes in children. Cesk. pediat. 11 no.7:484-489 July 56.

1. II. detska klinika Pediatr. fak. univ. Karlovy, predn. prof. MUDr. J. Houstek, Farmakolog. ustav Fakulty vseobecneho lekarstvi KU, predn. prof. Dr. B. Polak.
(DIABETES MELLITUS, in infant and child,
disord. of reflex regulation of blood sugar (Cz))



M

INFLUENCE OF ELASTIC COMPRESSION UPON THE MAXIMUM MAGNETIC SUSCEPTIVILITY OF NICKEL, SALVADOR VELAYOS (Z. PHYSIK, 1940, 116, 340-348)
Longitudinal compression of nickel rods was found to increase the maximum susceptibility, and to decrease the magnetising field strength at maximum susceptibility. Annealing increased, whi.e plastic deformation decreased, the sensitivity to pressure! Simple empirical formulae were found to fit the observations up
to the maximum pressures used (10kg./ mm.2). --CZ

VELPA, V.

A vibrating machine for the production of concrete blocks for underground walls.

P. 248. (STAVPA.) (Bratislava, Czechoslovakia) Vol. 4, No. 8, Aug. 1957

SO: Monthly Index of East European Accession (EEAI) LC. Vol. 7, No. 5, 1958

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Complete mechanization of manuring. p. 229.

SBORNIK. RADA MECHANISACE A ELEKTRIFIKACE SEMEDESTVI A LESNICTVI
Vol. 28, No. 4, Oct. 1955.

Czechoslovakia

SOURCE: EEAL, Vol. 5, No. 7, July 1956.

VELCEA, Ion

Tara Oasului; a study of economic regional geography. Probleme geog 9:217-243 '62. (publ. '63)